# AgDISP Sensitivity to Crop Canopy Characterization

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### Introduction

- AgDISP is a computer model used to predict where spray droplets will go;
- The model is increasingly being used by regulators and applicators;
- It is important that the model be tested under a wide variety of field conditions.



## Research Objective

 To determine the correlation between field collected data and AgDISP predicted data under a variety of crop canopies.



## **General Testing Procedures**

- AT-402B was flown at 6-8 ft above the canopies;
- CP-03 nozzles: 0.125 orifice, 30 psi, 30° deflector;
- 6 trials was carried out in cotton canopies ranging from 0 – 3 ft (0 was plowed cotton field);
- Volume median diameter was 274 μm.



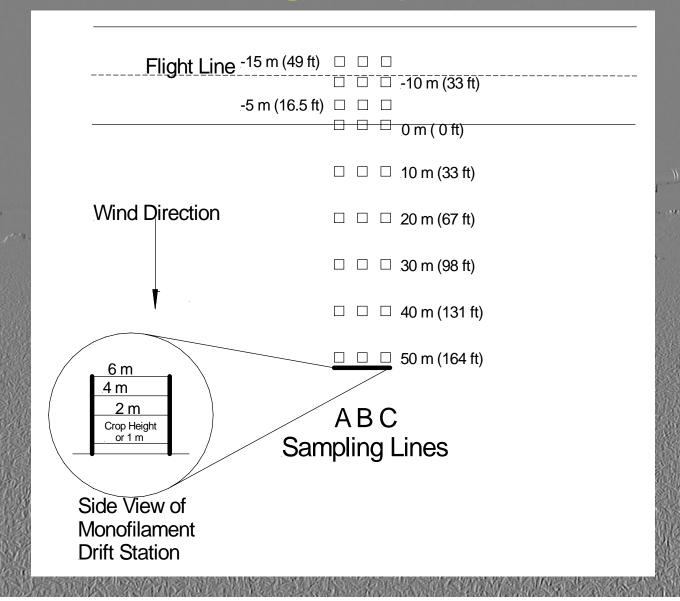
# **Testing Parameters**

Plant Height (in)	Plant Width (in)	Closure Canopy* (%)	
( O	0	0	
13	9.8	27.2	
23.2	14.2	39.4	
27.6	18.2	50.6	
33.5	28.2	78.3	
39.3	36	100	

Row width was 36 inches



## **Testing Layout**







## **Weather Conditions**

Test	Wind Speed	Temp	RH	Height
	(m/sec)	(∘C)	(%)	(m)
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<1 ( v	3.5	3411	47	, J Ö
2	2.6	31.8	50.	0.33
3	2.0	31.8	72	0.59
4	2.6	31.9	50	0.70
5	2.1	31.5	73	0.85
6	3.6	33.8	48	1.0

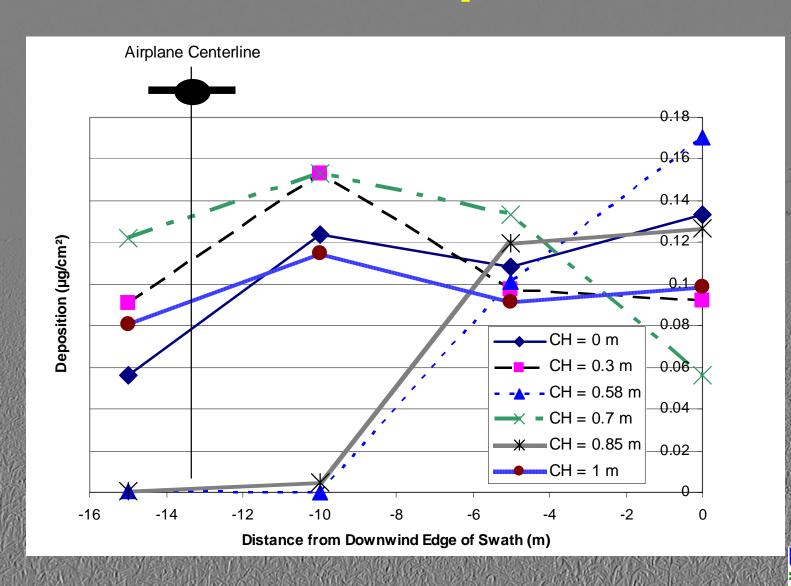


#### Results

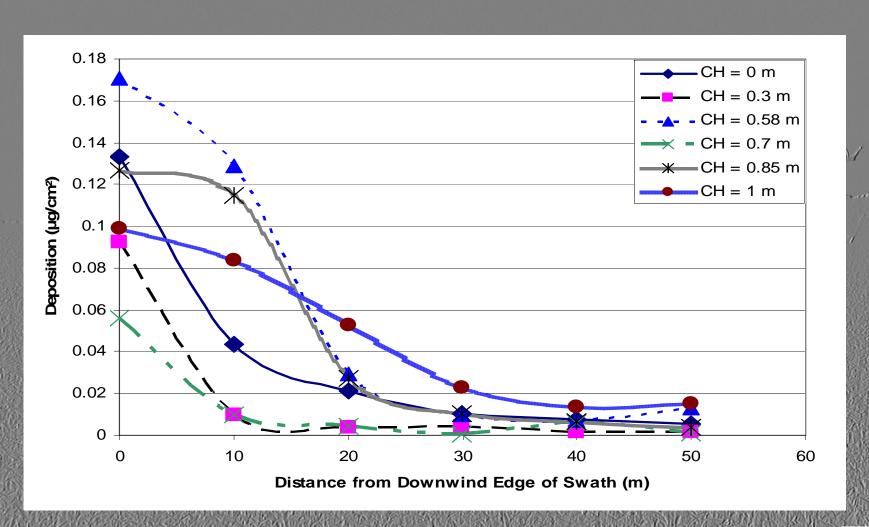
- In-swath deposition measured to ensure consistency between each tests;
- Downwind deposition to measure fallout spray component;
- String samplers at 187 ft downwind to measure airborne component.



## In-Swath Deposition



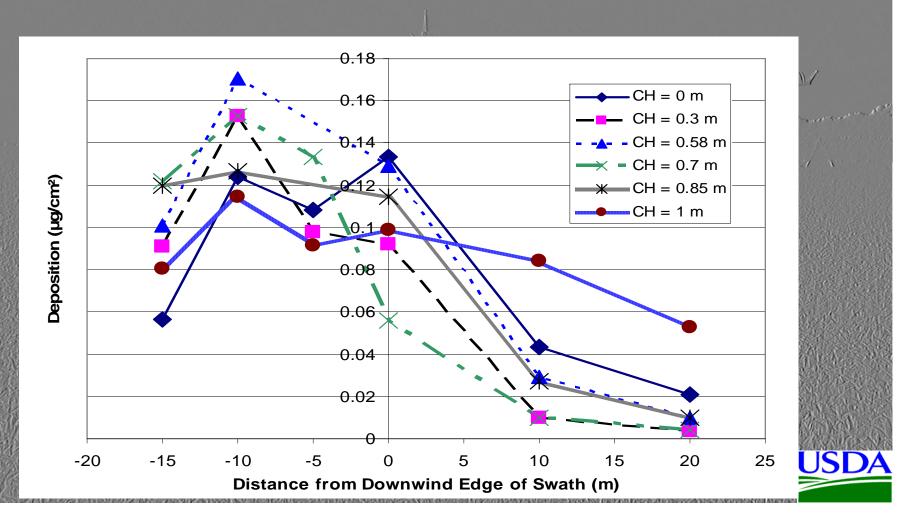
## **Downwind Deposition**



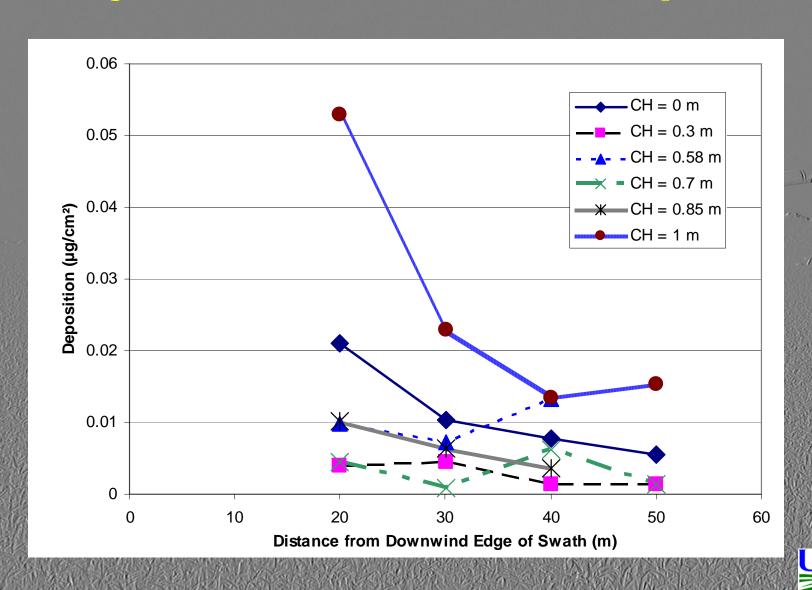


## "Adjusted" Deposition

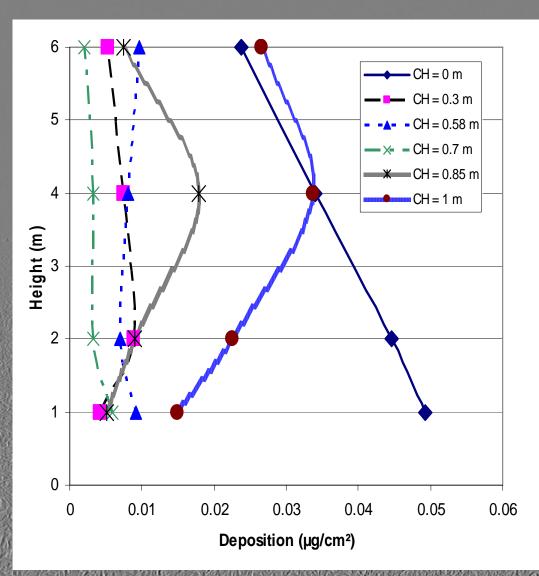
Tests with canopy heights of 0.58 and 0.85 m were adjusted upwind 10 m to account for field layout error.



### "Adjusted" Downwind Deposits



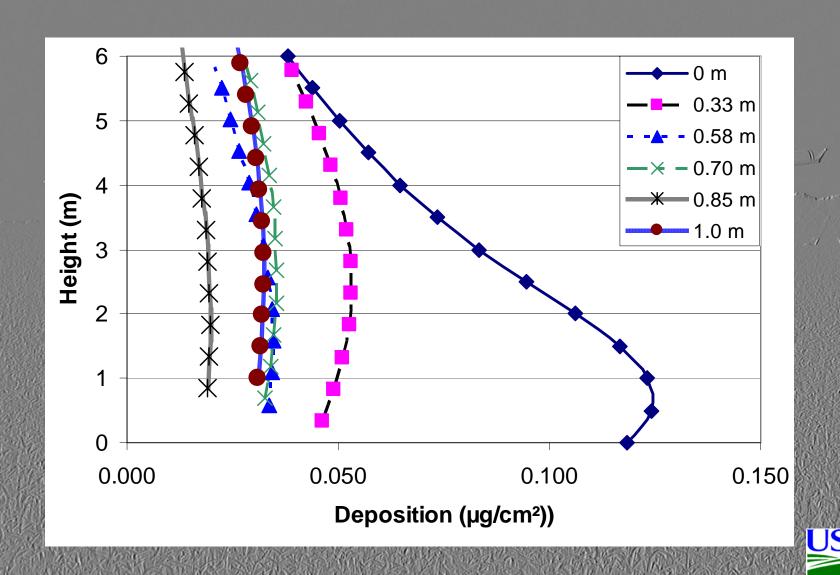
## **Deposition on String**



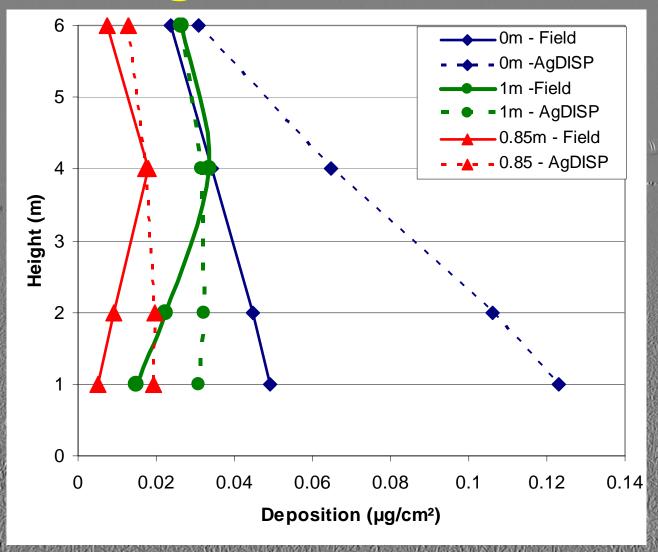
0 and 1 m canopies had the highest downwind spray deposits;



## **AgDISP Predicted Data**



# Comparison of Field Data to AgDISP Data



#### Conclusions

- The vertical deposition values at 50 m for crop heights between 0.3 and 0.8 m were very comparable between the field collected and AgDISP predicted data;
- The AgDISP model overpredicted by a factor of 2 the levels of spray at 1 m for the trials conducted at 0 or 1 m crop canopy height as compared to field measurements; however, at 4 and 6 m above the ground, the AgDISP and field data were very comparable.
- User of the AgDISP should be encouraged by the accuracy of the model but are cautioned when using the model with canopies that >80% closed.



